



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,935	03/11/2004	Michael David Kistler	AUS9 2003 0926 US1	6938
44994	7590	11/04/2005	EXAMINER	
IBM CORPORATION (DWL) C/O LALLY & LALLY, L.L.P. P. O. BOX 684749 AUSTIN, TX 78768-4749			RODRIGUEZ, GLENDA P	
		ART UNIT		PAPER NUMBER
		2651		

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	✓ 10/798,935	KISTLER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Glenda P. Rodriguez	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 1-7 is/are allowed.
- 6) Claim(s) 8-11 and 15-18 is/are rejected.
- 7) Claim(s) 12-14 and 19-21 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/18/04.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### *Claim Objections*

1. Claim 1 is objected to because of the following informalities: "a set of disks, each of the seat of the disks..."; the Claim states one set of disks, a set of disks, but however, it then mention each set of disks, like a plurality of disks has been mentioned previously in the Claim. Appropriate correction is required.

2. Claim 18 recites the following: "wherein the method further includes..." in Claim 17, which depends in Computer Program Code Claim 8. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8-9 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over George (US Patent Pub. No. 2003/0163756 A1) in view of Jones et al. (US Patent No. 5, 796, 540).

Regarding Claims 8 and 15, George teaches a disk controller (Fig. 4, Element 154 and [0014]), comprising:

Disk controller computer code means for replicating a first portion of data on a plurality of the set disks and for activating two or more of the disks ([0010]-[0014]);

Disk controller computer code means for storing a second class of data in the set of disks without replication ([0005], wherein George teaches that the disks contains different numbers of sectors. It is obvious to an artisan of ordinary skill in the art to know that when the sector ID and other identification data is written in the set of disks, this data cannot be replicated because it is the identification data that identifies that exact track or sector.);

Disk controller code means for maintaining the angular velocity of each of the active disks at a minimum angular velocity sufficient to attain a specified performance level ([0051], wherein George teaches that the controller controls the disk platters to run at a correct speed.);

However, George does not explicitly teach wherein the controller controls them at an angular velocity, which is minimum. Jones et al. teaches that the microprocessor controls the set of disks in order for them to move synchronously (therefore the specified minimum performance level is the synchrony in the movement of the disks) at a angular velocity at a particular speed. (See Col. 2, L. 37-55). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify George's invention with the teaching of Jones et al.'s invention in order to control the velocity of the disks and be able to control the data read and written in the plurality of mediums as taught by Jones et al. herein in the Summary of the Invention.

Regarding Claims 9 and 16, the combination of George and Jones et al. teach all the limitations of Claims 8 and 15, respectively. The combination further teaches wherein the code means for replicate the first portion of data comprises code means for replicating the first portion of data on each of the disks in the set of disks ([0010]-[0014] of George).

5. Claims 10-11 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over George and Jones et al. as applied to claim 8 and 15 above, and further in view of Woods (US Patent No. 5, 881, 311).

Regarding Claims 10 and 17, the combination of George and Jones et al. teach all the limitations of Claim 8. However, the combination does not explicitly teach wherein balancing the loading on the active disks by routing the request to the active disk with the least loading. Woods teaches a load balancing computer algorithm in Fig. 21A and 21B wherein load balancing is being performed in the set of disk. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify the combination's invention with the teaching of Woods in order to solve storage management problems as explained in the Abstract of Woods.

Regarding Claims 11 and 18, the combination of George and Jones et al. teach all the limitations of Claims 10 and 8, respectively. The combination further teaches wherein the method further includes preventing the angular velocity of any active disk from differing from the angular velocity of any other active disk by more than one discrete level whereby the angular velocities of all of the active disks are approximately equal (microprocessor controls the set of disks in order for them to move synchronously, therefore the specified minimum performance level is the synchrony in the movement of the disks at a angular velocity at a particular speed. See Col. 2, L. 37-55).

*Allowable Subject Matter*

6. Claims 12-14 and 19-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claims 12 and 19, the primary reason for allowable subject matter is the inclusion of the limitation wherein altering the angular velocity includes increasing the angular velocity of at least one of the active disks if the latency is unacceptably high.

Regarding Claims 13 and 20, the primary reason for allowable subject matter is the inclusion of the limitation wherein altering the angular velocity includes decreasing the angular velocity of at least one of the active disks if the latency is below a specified threshold.

Regarding Claims 14 and 21, the primary reason for allowable subject matter is the inclusion of the limitation wherein the disk controller recognizes two or more levels of request priorities and further code means for routing requests of a first priority to an active disk in a first subset of active disks based, at least in part, on the current loading of the disks in the first subset and the disk controller routes requests of a second priority to an active disk in a second subset of active disks based, at least in part, on the current loading of the disks in the second subset.

7. Claims 1-7 are allowed.

The following is an examiner's statement of reasons for allowance: the primary reasons for allowance in the inclusion of the combinations of the limitations wherein the disk controller is configured to route requests for data in the first portion of data to one of the active disks based, at least in part, on the current loading of the active disks and wherein the disk controller is further configured to alter the angular velocity of at least one of the active disks responsive to

Art Unit: 2651

determining that the latency associated with one or more of the data requests differs from a specified threshold.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenda P. Rodriguez whose telephone number is (571) 272-7561. The examiner can normally be reached on Monday thru Thursday: 7:00-5:00; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

OPR  
gpr  
10/24/05.

DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600